



November 2015

DOD MANUFACTURING ARSENALS

Actions Needed to Identify and Sustain Critical Capabilities

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE NOV 2015		2. REPORT TYPE		3. DATES COVERED 00-00-2015 to 00-00-2015	
4. TITLE AND SUBTITLE DOD Manufacturing Arsenal: Actions Needed to Identify and Sustain Critical Capabilities				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Government Accountability Office, 441 G Street NW, Washington, DC, 20548				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 56	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

GAO Highlights

Highlights of [GAO-16-86](#), a report to congressional addressees

Why GAO Did This Study

DOD's three manufacturing arsenals provide manufacturing, supply, and technical support services for the military services and allies during national emergencies and contingency operations. The Fiscal Year 2014 NDAA required DOD to report to Congress on its arsenals and included a provision for GAO to review DOD's report. This report assesses (1) actions DOD has taken to assign work to the manufacturing arsenals to generate sufficient revenue to recover their operating expenses, (2) the extent to which DOD is strategically positioned to sustain the manufacturing arsenals' critical capabilities, and (3) the extent to which DOD's September 2014 report addresses statutory reporting elements and is consistent with relevant research presentation standards for a defense research study. To conduct this review, GAO analyzed documentation, visited the arsenals, and interviewed relevant DOD officials. GAO assessed DOD's September 2014 report against the statutory elements and generally accepted research standards.

What GAO Recommends

GAO recommends that DOD issue implementing guidance for make-or-buy analyses; identify fundamental elements for implementing its strategic plan; and develop and implement its process for identifying critical capabilities and the minimum workload level needed to sustain them. DOD concurred with the recommendations but disagreed with some statements in the report. GAO believes the statements are accurate, as discussed in the report.

View [GAO-16-86](#). For more information, contact Johana Ayers at (202) 512-5741 or ayersj@gao.gov.

November 2015

DOD MANUFACTURING ARSENALS

Actions Needed to Identify and Sustain Critical Capabilities

What GAO Found

Since 2012, the Department of Defense (DOD) has taken various actions to assign work to its three manufacturing arsenals—Pine Bluff Arsenal, Rock Island Arsenal Joint Manufacturing and Technology Center, and Watervliet Arsenal Joint Manufacturing and Technology Center—in an attempt to generate sufficient revenue to recover operating expenses following a significant decline in demand for materiel, as well as to maintain manufacturing skills to sustain readiness. For example, the Army directed acquisition programs to assign work to the arsenals consistent with the arsenals' capabilities. While these actions have increased revenue, the increases have been small relative to operating expenses. Further, DOD may not always appropriately consider the arsenals as a source of manufacture, because it has not developed clear, step-by-step implementing guidance on conducting make-or-buy analyses to determine whether to purchase items from an arsenal or the private sector, which potentially limits the arsenals' ability to generate revenue. Because DOD's actions as of September 2014 did not generate sufficient revenue, Congress provided \$375 million collectively in fiscal years 2014 and 2015 to help recover the arsenals' operating expenses.

DOD is not strategically positioned to sustain the manufacturing arsenals' critical capabilities, as it has not identified fundamental elements for implementing its strategic plan or identified these capabilities. Such capabilities help ensure that DOD can respond to emergencies and obtain products and services it could not otherwise acquire from private industry in an economical manner. DOD has a strategic plan that includes goals and objectives related to sustaining the arsenals' critical capabilities; however, it has not identified fundamental elements, such as milestones and resources, needed to implement the plan. As a result, DOD lacks information that would be useful in determining progress in achieving the plan's stated goals and objectives for the arsenals. Moreover, DOD's past efforts to identify the arsenals' critical capabilities had shortcomings, such as each arsenal using a unique method to do so. DOD has an effort under way to develop a process for identifying these critical capabilities and determining a minimum level of workload needed to sustain them, but this effort has been delayed to allow for coordination with stakeholders. Until such a process is developed and implemented, for example through an instruction, DOD is not positioned to determine the minimum workload levels needed or to appropriately adjust the arsenals' equipment and personnel level to sustain these capabilities.

DOD's September 2014 *Report on Army Manufacturing Arsenal Study* met the statutory requirements to address seven reporting elements within the National Defense Authorization Act (NDAA) for Fiscal Year 2014. However, GAO found that additional information would have made the report more consistent with relevant generally accepted research presentation standards for a defense research study and helped decision makers to identify and evaluate information presented in the report. For example, DOD did not disclose that it has not developed a process for identifying the arsenals' critical capabilities. Also, had stakeholders seen the report before it was issued, as called for by the standards, they would have been informed of its results and could have provided comments, as needed, to allow DOD to present a more sound, complete, and clear report.

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Abbreviations

AMC	Army Materiel Command
ASA (ALT)	Assistant Secretary of the Army for Acquisition, Logistics and Technology
DLA	Defense Logistics Agency
DOD	Department of Defense
ODASD (MPP)	Office of the Deputy Assistant Secretary of Defense for Maintenance Policy and Programs
OSD	Office of the Secretary of Defense

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November 17, 2015

Congressional Addressees

The Department of Defense (DOD) has three manufacturing arsenals that provide manufacturing, supply, and technical support services for the military services, other DOD agencies, allies, and commercial industry. The three manufacturing arsenals provide products or services that are unavailable from private industry or ensure a ready and controlled source of technical competence and resources in case of national defense contingencies or other emergencies. Each of the manufacturing arsenals, which are operated by the Army, has a specialized mission:

- Pine Bluff Arsenal in Arkansas produces conventional ammunition and other types of munitions;
- Rock Island Arsenal Joint Manufacturing and Technology Center in Illinois manufactures weapons and houses the Army's only remaining foundry;¹ and
- Watervliet Arsenal Joint Manufacturing and Technology Center in New York, the Army's only cannon maker, also produces other armaments and mortars.²

DOD designates certain processes at the manufacturing arsenals as critical capabilities. According to a 2013 report by the Under Secretary of Defense for Acquisition, Technology and Logistics, critical capabilities are processes deemed crucial to the nation's ability to respond to urgent requirements in the event of national emergencies or processes that cannot be performed by private industry in an economical or timely manner.³ According to this report, the manufacturing arsenals need sufficient work to sustain their critical capabilities, which require specialized skills and equipment. Historically, the manufacturing arsenals have had less work during peacetime than they do when they are

¹For the purposes of this report, we refer to the Rock Island Arsenal Joint Manufacturing and Technology Center as Rock Island Arsenal.

²For the purposes of this report, we refer to the Watervliet Arsenal Joint Manufacturing and Technology Center as Watervliet Arsenal.

³See Department of Defense, *Report to Congress on Critical Manufacturing Capabilities and Capacities* (August 2013).

supporting combat operations. We found in November 2009⁴ that during the wars in Iraq and Afghanistan, for example, the manufacturing arsenals experienced a surge in workload to provide vital manufacturing capabilities.⁵ However, as DOD's combat operations have drawn down, there has been a decline in demand for materiel,⁶ and the department has faced challenges in assigning enough work for the manufacturing arsenals to generate sufficient revenue to recover their operating expenses and sustain their critical capabilities.

Declines in workload at the manufacturing arsenals are not new, as our body of work on these issues has shown. We found in November 1998 that, following the end of the Cold War, the manufacturing arsenals and maintenance depots faced increasing uncertainty regarding workload, funding, and personnel levels, and that DOD had not reached consensus on a long-term strategy for improving the efficiency and effectiveness of its arsenals and depots.⁷ We also found that DOD did not have a comprehensive plan—addressing excess capacity, workload planning, personnel requirements, and productivity—for managing its manufacturing arsenals and maintenance depots. We recommended, among other things, that DOD assess the potential for reducing excess capacity at the manufacturing arsenals and that the Secretary of the Army issue a clear and concise statement describing a long-range plan for maximizing the efficient use of the arsenals and maintenance depots. DOD concurred with our recommendations and issued 20 individual action plans with long- and short-term milestones and the Army's Depot Maintenance Enterprise Strategic Plan in 2000, among other actions.

⁴GAO, *Defense Infrastructure: The Army Needs to Establish Priorities, Goals, and Performance Measures for Its Arsenal Support Program Initiative*, [GAO-10-167R](#) (Washington, DC: Nov. 5, 2009).

⁵DOD officials and guidance commonly refer to the work assigned to the arsenals as "workload."

⁶Materiel refers to all of the items necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes.

⁷GAO/NSIAD, *Army Industrial Facilities: Workforce Requirements and Related Issues Affecting Depots and Arsenals*, [GAO/NSIAD-99-31](#) (Washington, DC: Nov. 30, 1998).

More recently, in November 2009,⁸ we reported on the Arsenal Support Program Initiative, a demonstration program designed to help maintain the viability of the manufacturing arsenals in part by enabling commercial firms to lease vacant space at the arsenals.⁹ We found that the Army had not determined its highest priorities for the Arsenal Support Program Initiative or developed a strategy that included performance goals. We recommended, among other actions, that DOD establish outcome-focused performance measures to assess the progress the Army had made toward achieving the initiative's purposes. DOD did not comment on our recommendation at the time and the initiative expired in fiscal year 2012. Information on related prior work can be found on the Related GAO Products page at the end of this report.

Section 322 of the National Defense Authorization Act for Fiscal Year 2014 required the Secretary of Defense to conduct a review of the manufacturing arsenals and to submit to Congress a report on the results of this review, covering seven reporting elements specified in the statute.¹⁰ Among the seven reporting elements, the Secretary of Defense was to report on the extent to which operations at each manufacturing arsenal could be streamlined, improved, or enhanced, as well as the effectiveness of DOD's strategy to assign work to each of the arsenals. DOD responded to this mandate with its Report on Manufacturing Arsenal Study (the report), which it submitted to the congressional defense committees in September 2014.¹¹ Section 322 also included a provision that we assess DOD's report. Separately, congressional requesters asked us to review DOD's strategy to assign work to the manufacturing arsenals, among other matters. This report provides our response to both

⁸[GAO-10-167R](#).

⁹The Arsenal Support Program Initiative was initially authorized by the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, Pub. L. No. 106-398, § 343 (Oct. 30, 2000). A primary goal of the program was to enable commercial firms to lease vacant space at the arsenals once that space had been renovated, thereby encouraging collaboration between the Army and commercial firms as well as reducing the costs the government incurred to operate and maintain the arsenal facilities. This initiative was in effect from fiscal year 2001 through 2012 and was not reauthorized after its expiration in fiscal year 2012.

¹⁰Pub. Law No. 113-66, §322 (Dec. 26, 2013).

¹¹Department of Defense, *Report on Manufacturing Arsenal Study* (August 2014), submitted to the congressional defense committees on September 11, 2014, is referred to throughout this report as "the report".

the mandate and the request. This report assesses (1) actions, if any, that DOD has taken to assign work to the manufacturing arsenals to generate sufficient revenue to recover their operating expenses; (2) the extent to which DOD is strategically positioned to sustain the manufacturing arsenals' critical capabilities; and (3) the extent to which DOD's September 2014 report meets the requirements to address the statutory reporting elements and is consistent with relevant generally accepted research presentation standards for a defense research study.

To address our first two objectives, we obtained pertinent documents, including DOD directives, instructions, and reports; Army regulations and instructions, memorandums, strategic plans, and other guidance; and information on the organic defense industrial base and each of the three manufacturing arsenals (Pine Bluff, Rock Island, and Watervliet), such as the arsenal's current levels of workload and operating expenses. We also interviewed officials from several DOD entities with responsibilities related to arsenal operations, including the Office of the Deputy Assistant Secretary of Defense for Maintenance Policy and Programs [ODASD (MPP)]; Headquarters Department of the Army G-4 Maintenance Directorate; the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology [ASA (ALT)]; and Army Materiel Command (AMC), as well as the three manufacturing arsenals. For our first objective, to assess the actions, if any, that DOD has taken to assign work to the manufacturing arsenals to generate sufficient revenue to recover their operating expenses, we also interviewed DOD officials who were involved in assessing and implementing efforts to improve or enhance operations at the arsenals. We compared existing guidance on the process used to consider manufacturing arsenals as a source of manufacture to federal internal control standards for control activities.¹²

For our second objective, to assess the extent to which DOD is strategically positioned to sustain the manufacturing arsenals' critical capabilities, we interviewed DOD officials who contributed significantly to the department's current strategy to assign work to the arsenals. We then compared DOD's existing strategy for the manufacturing arsenals to

¹²GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: Nov. 1, 1999).

standard practices for project management and identified discrepancies.¹³ We also reviewed two Army assessments related to the levels of equipment and personnel and determined that one of the assessments described an approach and findings that were reasonable, but we did not assess the accuracy or reliability of the underlying data, because doing so was beyond the scope of this review. The other assessment, however, did not contain sufficient information for us to determine if the approach used to calculate its results was reasonable. In the absence of other reliable sources, we limited our use of these two assessments in this report to noting that the arsenals had conducted assessments containing recommendations intended to guide subsequent decision making.

For our third objective, to determine the extent to which DOD's September 2014 report meets the requirement to address the statutory reporting elements and is consistent with relevant generally accepted research presentation standards for a defense research study, we conducted a two-part assessment of DOD's September 2014 report. First, to assess the extent to which DOD's report meets the requirement to address the seven statutory reporting elements, we compared DOD's September 2014 Report on Manufacturing Arsenal Study to the elements listed in section 322 of the National Defense Authorization Act for Fiscal Year 2014. For each statutory reporting element, we determined whether DOD's report met the statutory requirement by including the reporting element and providing related content. Second, we assessed the extent to which DOD's report is consistent with relevant generally accepted research presentation standards for a defense research study. To do so, we determined which generally accepted research presentation standards for a sound, complete, and clear defense research study were relevant, given our review's objectives and based on the contents of DOD's report. We used standards that we had described in our 2006 report on DOD transportation capabilities.¹⁴ In this 2006 report, we reviewed research

¹³[GAO/AIMD-00-21.3.1](#) and Project Management Institute, *A Guide to the Project Management Body of Knowledge* (PMBOK® Guide), 4th ed. (Newtown Square, PA: 2008). *A Guide to the Project Management Body of Knowledge* provides standards for project managers. We have used *A Guide to the Project Management Body of Knowledge* to provide criteria in previous reports, including GAO, *National Preparedness: FEMA Has Made Progress, but Needs to Complete and Integrate Planning, Exercise, and Assessment Efforts*, [GAO-09-369](#) (Washington, D.C.: Apr. 30, 2009).

¹⁴GAO, *Defense Transportation: Study Limitations Raise Questions about the Adequacy and Completeness of the Mobility Capabilities Study and Report*, [GAO-06-938](#) (Washington, DC: Sept. 20, 2006).

literature and DOD guidance and identified frequently occurring, generally accepted research standards that are relevant for defense studies, including those related to the presentation of results. These GAO-developed generally accepted research presentation standards are consistent with Office of Management and Budget guidelines¹⁵ and DOD guidance¹⁶ on ensuring and maximizing the quality of information disseminated by federal agencies to the public. We determined that these GAO-developed standards are still current and relevant for the purposes of this report. Specifically, from the seven research standards related to the presentation of results, we determined that the following four were relevant to this review, based on the content of DOD's report:

1. Does the report present an assessment that is well documented and conclusions that are supported by the analyses?
2. Are the report's conclusions sound and complete?
3. Are the study results presented in a clear manner?
4. Are study participants/stakeholders informed of the study results and recommendations?

We determined that the remaining three research presentation standards were not relevant, given our review's objectives and based on the content of DOD's report. For example, because the report did not include recommendations, we did not apply the generally accepted presentation standard on whether recommendations were supported by analyses.

To determine the extent to which DOD's September 2014 report is consistent with the four relevant presentation standards, we then applied those standards to the contents of the report and available supporting documentation—such as DOD policy, guidance, assessments, and briefings. The extent to which the report's presentation of results is consistent with these relevant standards is an indication of the ease with which the evidence can be evaluated and of the soundness and completeness of the report and, thus, its usefulness in enabling decision

¹⁵Office of Management and Budget (OMB), *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, 67 Fed. Reg. 8452 (Feb. 22, 2002). These guidelines are still in effect.

¹⁶Memorandum from Deputy Secretary of Defense, *Ensuring the Quality of Information Disseminated to the Public by the Department of Defense*, dated Feb. 10, 2003, 68 Fed. Reg. 55944 (Sept. 29, 2003). This memorandum is still in effect.

makers to make fully informed decisions. We considered DOD's response to a statutory reporting element to be consistent with relevant generally accepted defense research presentation standards when the report explicitly addressed (e.g., included meaningful facts, figures, or clearly discussed) all aspects of the element and included sufficient specificity and detailed support. We considered DOD's response to a reporting element to be inconsistent with these standards when the report neither explicitly addressed all aspects of the element nor included sufficient specificity and detailed support. In such cases, we provided examples of additional information that, although not statutorily required, we believe would have made the report more consistent with the four relevant generally accepted research presentation standards. In addition, we discussed the results of our assessment of the September 2014 report with ODASD (MPP) officials—who had the lead for developing the report—and obtained their perspectives regarding the approach they used to develop it. Further details about our scope and methodology can be found in appendix I.

We conducted this performance audit from June 2014 to November 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Role and Organizational Structure of Manufacturing Arsenals

The "defense industrial base" includes all commercial and government-owned facilities that are responsible for the design, production, delivery, and maintenance of military weapon systems, subsystems, and components or parts that fulfill U.S. military requirements. The portion of the defense industrial base that is assigned to and forms an essential part of DOD's organization is referred to as the "organic defense industrial base." The organic defense industrial base consists of resource providers, acquisition and sustainment planners, and manufacturing and maintenance performers, such as DOD's government-owned manufacturing arsenals and maintenance depots. These government-owned and -operated installations, including the three manufacturing arsenals, provide services for a variety of customers, including the Army, the Navy, the Air Force, and some non-DOD agencies and foreign

countries. The Army's Industrial Operations activity group, a subset of the organic defense industrial base, includes the Army's manufacturing arsenals, maintenance depots, ammunition plants, and storage sites.¹⁷ According to the Army's Organic Industrial Base Strategic Plan 2012-2022,¹⁸ workforces and infrastructures of the Army Industrial Operations activity group are to be sized and adjusted accordingly over time to sustain critical manufacturing and core depot capabilities to support war-fighting equipment during current and future contingency operations. Within the Army, the Office of the ASA (ALT) serves in an oversight capacity and is responsible for establishing the policy and goals for the Army's industrial base program.

The three manufacturing arsenals are operated by the Army, managed by AMC, and under the direct command and control of the Army's Life Cycle Management Commands. Each manufacturing arsenal is aligned with a command that oversees the kind of work done at that arsenal. Specifically, Rock Island and Watervliet Arsenals are aligned with the TACOM Life Cycle Management Command¹⁹ and its mission of developing, acquiring, fielding, and sustaining ground systems. The work performed at Pine Bluff Arsenal is aligned with the Joint Munitions Command Life Cycle Management Command, the logistics integrator for life-cycle management of ammunition.

While the manufacturing arsenals are under the Army's operational control, organizations within the Office of the Secretary of Defense (OSD) perform policy, planning, program, and resource management functions for the industrial base, which includes the arsenals. Within OSD, the Office of the Assistant Secretary of Defense for Logistics and Materiel Readiness serves as the principal logistics official within senior DOD management. This office prescribes policies and procedures for the

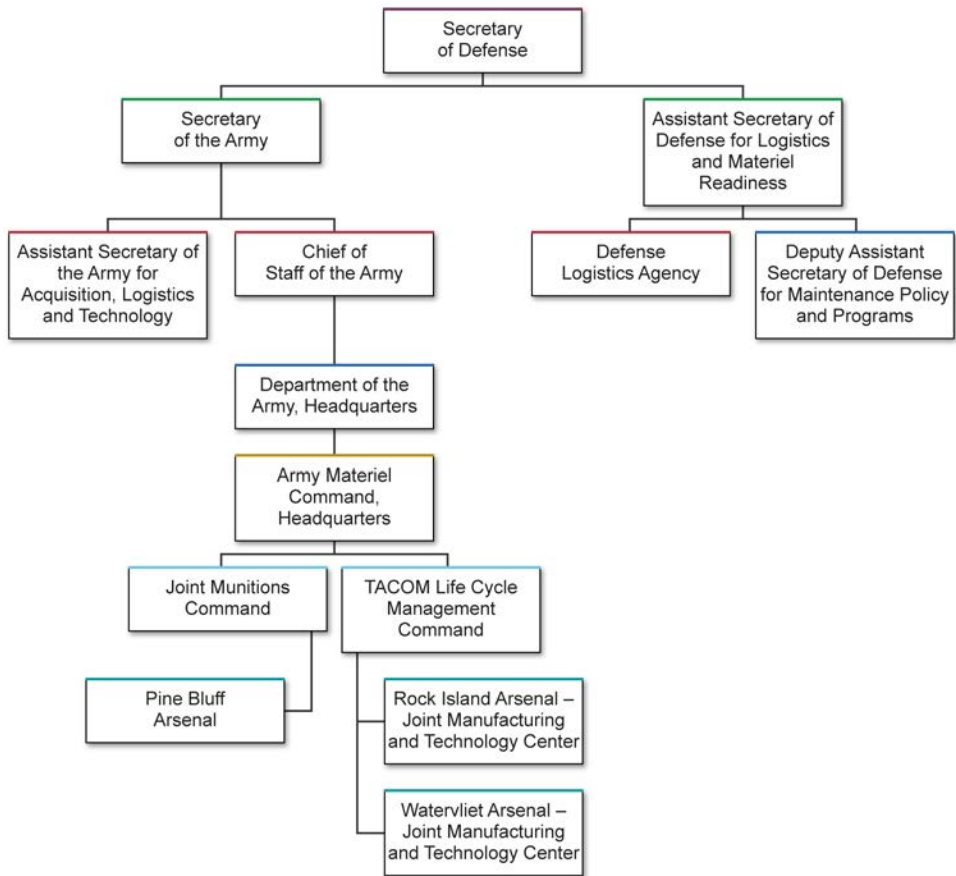
¹⁷The Army's Industrial Operations activity group is comprised of 13 government-owned and -operated installations, each with core competencies. These include three arsenals (Pine Bluff, Arkansas; Rock Island, Illinois; and Watervliet, New York), five maintenance depots (Anniston, Alabama; Corpus Christi, Texas; Letterkenny, Pennsylvania; Red River, Texas; and Tobyhanna, Pennsylvania), two munitions production facilities (Crane, Indiana, and McAlester, Oklahoma), and three storage sites (Blue Grass, Kentucky; Sierra, California; and Tooele, Utah).

¹⁸Department of the Army, *Organic Industrial Base Strategic Plan 2012-2022*.

¹⁹TACOM Life Cycle Management Command was formerly known as Tank-automotive and Armaments Command (TACOM).

conduct of logistics, maintenance, materiel readiness, strategic mobility, and sustainment support within DOD. For example, the Office of the Deputy Assistant Secretary of Defense for Maintenance Policy and Programs, under the authority of the Office of the Assistant Secretary of Defense for Logistics and Materiel Readiness, held primary responsibility for consolidating and submitting DOD's September 2014 report to Congress. Additionally, the Defense Logistics Agency (DLA) is DOD's logistics combat support agency, whose primary role is to provide supplies and services to America's military forces and sometimes procures items from the manufacturing arsenals. Figure 1 shows the structure of DOD's manufacturing arsenal organization, including relevant DOD entities.

Figure 1: The Department of Defense's (DOD) Manufacturing Arsenal Organizational Structure



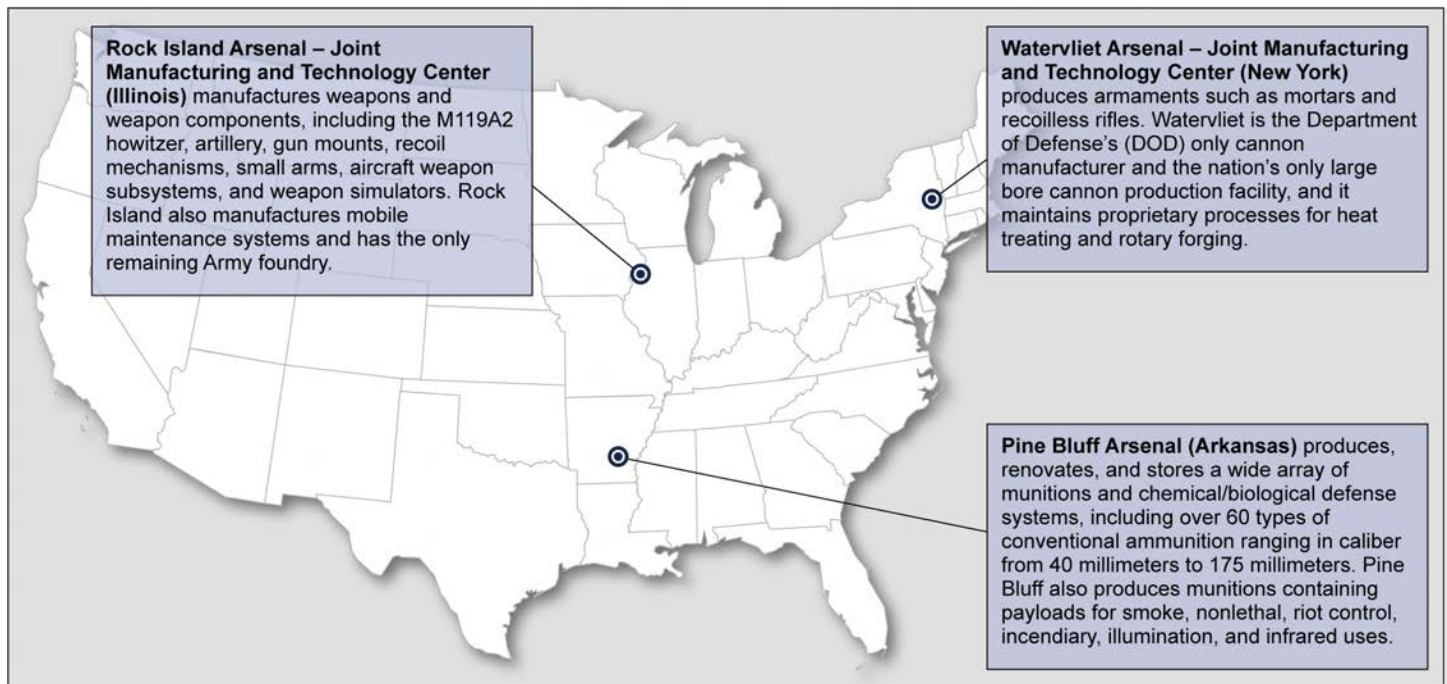
Source: GAO analysis of Department of Defense (DOD) information. | GAO-16-86

Each manufacturing arsenal has been designated by the Secretary of the Army as a Center of Industrial and Technical Excellence. This designation provides authority under section 2474 of Title 10 U.S. Code to partner with and lease facilities to industry on programs relating to core maintenance and technical expertise.

- Pine Bluff Arsenal is designated as a Center of Industrial and Technical Excellence for chemical and biological defense equipment.
- Rock Island Arsenal Joint Manufacturing and Technology Center is designated as a Center of Industrial and Technical Excellence for mobile maintenance systems; foundry operations; and add-on armor design, development, and prototype fabrication.
- Watervliet Arsenal Joint Manufacturing and Technology Center is designated as a Center of Industrial and Technical Excellence for manufacturing cannon and mortar systems.

Figure 2 shows the manufacturing arsenals' geographic locations within the United States and their missions.

Figure 2: Locations and Missions of the Department of Defense's (DOD) Manufacturing Arsenals



Source: GAO analysis of DOD information. | GAO-16-86

Legislative Authorities That Affect the Workload Process

The manufacturing arsenals are subject to various legislative provisions that affect the work they do and how this work is allocated.²⁰ These include section 4532 of Title 10 U.S. Code, commonly referred to as the Army Arsenal Act, and other statutes that authorize the establishment of public-private partnerships, including direct sales, research and development, and facilities use agreements, any of which may affect how much work arsenals undertake. The Army Arsenal Act specifically requires the Army to have its supplies made in U.S. government factories or manufacturing arsenals, provided that they can produce the supplies on an economical basis. The economical basis determination, according to the Army Arsenal Act's implementing guidance, is based on a comparison of the government's manufacturing costs with the cost of purchasing the supplies commercially—a process commonly referred to as the “make-or-buy” analysis. More broadly, section 2535 of Title 10 U.S. Code, which applies to all the armed forces, declares that it is Congress's intended policy that “to the maximum extent practicable, reliance will be placed on private industry for support of defense production.”²¹ There are also a number of authorities that the Army's manufacturing arsenals may use to establish commercial-like relationships with other entities. For example, section 2474 of Title 10 U.S. Code authorizes the establishment of public-private partnerships between Army manufacturing arsenals and private entities. Additionally, section 4544 of Title 10 U.S. Code is an example of a direct sales statute, which gives the manufacturing arsenals the authority to enter into cooperative agreements—such as sales and leasing contracts—with non-Army entities, both public and private.

²⁰Section 2464 of Title 10 U.S. Code also requires that core logistics workload, including that necessary to maintain and repair weapon systems and other military equipment, be assigned to DOD's government-owned and -operated facilities. However, because of the different missions of the manufacturing arsenals and maintenance depots, the provisions of this section generally apply to DOD's depots.

²¹Army Regulation 700-90, *Army Industrial Base Process* (Feb. 27, 2014) also states that the Army will rely on the private sector for support of defense production to the maximum extent practicable. Government-owned facilities may be considered essential when no commercial producer can be induced to supply needed items to ensure continued availability of important capabilities in time of national emergency or when government-owned facilities are more efficient or economical than private industry.

Funding Sources for the Manufacturing Arsenal and How Customers' Rates Are Set

Funding for the manufacturing arsenals is managed through the Army Working Capital Fund. Section 2208 of Title 10 U.S. Code authorizes the Secretary of Defense to establish Working Capital Funds to finance inventories of supplies and industrial activities that provide common services such as repair, manufacturing, or remanufacturing. When a private entity, such as the prime integrator of a major weapon system, or a government component or agency places an order with a manufacturing arsenal for equipment or services, payments are made to the Working Capital Fund on a reimbursable basis. Charges for goods and services provided through the fund include the full costs of the goods and services provided and amounts set for the depreciation of capital assets. According to DOD financial reports, in fiscal year 2014, the combined total operating expenses incurred at the three manufacturing arsenals—which were applied to the Army Working Capital Fund—were approximately \$400 million.²²

The Army's Industrial Operations activity group sets the rates customers will pay the manufacturing arsenals for equipment or services they order, on a direct labor-hour basis.²³ The process for setting rates begins 18 months before the start of the fiscal year in which the manufacturing will be performed. Based on the anticipated level of future work, the managers of the manufacturing arsenals propose hourly rates that will allow them to recover all of their operating costs. Then, the proposed business plan and rates and the manufacturing arsenal budget are approved through the Army chain of command. Ultimately, the rates are set by the Department of the Army and DOD. Although the goal of the Army Working Capital Fund—unlike the goal of a profit-oriented commercial business—is to be self-supporting by recovering only the cost of supplies, services performed, and applicable administrative expenses, a manufacturing arsenal may end the year with more or less resources than it had originally anticipated—depending on whether or not its actual costs and workload over the fiscal year were as forecasted. In such

²²These total operating expenses include the costs of goods and services sold.

²³"Direct labor hours" are a measure of workload.

cases, there may be a rate increase in a subsequent year in an effort to offset the losses of a prior year or a rate reduction to offset gains.²⁴

Additionally, every year the Army is required to include, in annual budget documents submitted to Congress to support the President's fiscal year budget request, an estimate of funds required in that fiscal year to cover the costs of unutilized or underutilized plant capacity at Army arsenals.²⁵ This funding is referred to as Industrial Mobilization Capacity funding. However, Congress may or may not appropriate funds specifically for this purpose from one year to the next. According to data provided by DOD, two of the manufacturing arsenals—Pine Bluff and Watervliet—received funding through the Industrial Mobilization Capacity account, a subaccount of the Army's Working Capital Fund, every fiscal year from 2000 through 2006—and Rock Island Arsenal received funds from fiscal year 2001 through 2007—to cover the costs of unutilized or underutilized plant capacity. In fiscal years 2008 through 2013, the manufacturing arsenals did not receive funding for Industrial Mobilization Capacity, although appropriations specifically for this purpose were again made in fiscal year 2014 in the amount of \$150 million. Additionally, in fiscal year 2015, Congress appropriated \$225 million to the Working Capital Fund for

²⁴Section 2208 of Title 10 U.S. Code requires that the Army Working Capital Fund establish billing procedures ensuring that the balance of the fund does not exceed the amount necessary to provide for the working capital requirements of the fund.

²⁵According to section 4541 (d)(2) of Title 10 U.S. Code, which sets forth the requirement of the Army to provide an estimate of funds needed to cover unutilized or underutilized arsenal capacity, unutilized and underutilized plant capacity costs refer to the costs associated with operating and maintaining the facilities and equipment of an Army arsenal that the Secretary of the Army determines are required to be kept for mobilization needs, in those months in which the facilities and equipment are not used or are used 20 percent or less of available work days.

maintaining competitive rates at arsenals, a purpose which is distinct from covering costs of underutilized or unutilized plant capacity.²⁶

The levels of work at the manufacturing arsenals have changed over time. Specifically, according to the Secretary of the Army, there has been a precipitous drop in demand for Army materiel that has resulted in a decline in workload and an increase in overhead rates at the manufacturing arsenals.²⁷ Army personnel data for these arsenals indicates that, during fiscal years 2000 through 2002 (prior to the start of operations in Iraq), combined total workload at the three manufacturing arsenals ranged from approximately 1.5 million to 1.7 million direct labor hours each year. During fiscal years 2003 through 2012 (during operations in Iraq and Afghanistan), the combined total workload at the three manufacturing arsenals each year ranged from approximately 1.6 million to 3.0 million direct labor hours. In fiscal years 2013 and 2014 (after operations in Iraq had ended), the combined total workload each year ranged from approximately 1.2 million to 1.7 million direct labor hours.

Because the manufacturing arsenals operate under the Army Working Capital Fund, they must include all costs of running the installation—such as costs for security and facility maintenance—in the rates they charge customers.²⁸ As a result, when the volume of work decreases, as it did in

²⁶The purpose of maintenance of competitive rate funding is distinct from appropriations made for the purpose of Industrial Mobilization Capacity, which covers costs associated with unutilized or underutilized plant capacity. For an example of purpose language associated with Industrial Mobilization Capacity appropriations, see *Consolidated Appropriations Act, 2014*, Pub. L. No. 113-76, Division C, title VIII, § 8141 (Jan. 17, 2014). For purpose language associated with the maintenance of competitive rates, see *Consolidated and Further Continuing Appropriations Act, 2015*, Pub. L. No. 113-235, Div. C, title VIII, § 8044 (Dec. 16, 2014). With respect to these two appropriations, the Office of the Assistant Secretary of Defense for Logistics and Materiel Readiness told us that Congress did not provide additional funds to DOD's overall total budget authority; rather, Congress redirected funding from other defense missions.

²⁷Memorandum from the Secretary of the Army, *Manufacturing of Army Materiels in Army Arsenals* (Apr. 22, 2014).

²⁸Rock Island Arsenal - Joint Manufacturing and Technology Center is a tenant on the Rock Island Arsenal Army garrison. As such, some of the typical base functions, such as base security, are provided by U.S. Army Installation Management Command.

fiscal years 2013 and 2014, those fixed costs of operation²⁹ must be spread over a shrinking base of work; the result is an increased cost per unit and higher rates. For example, according to a briefing developed by AMC and presented to Congress in July 2014, during fiscal years 2013 and 2014, the stabilized rate³⁰ at Pine Bluff increased from approximately \$126 per hour to approximately \$135 per hour, which represented approximately a 7 percent increase.³¹ In the same time frame, the stabilized rate at Rock Island increased from approximately \$112 per hour to approximately \$137 per hour—approximately a 23 percent increase. Also during this time frame, the stabilized rate at Watervliet increased from approximately \$195 per hour to approximately \$202 per hour—approximately a 4 percent increase. According to AMC’s briefing, in July 2014 the Army projected that stabilized rates for fiscal year 2015 would have been significantly higher without the infusion of Arsenal Sustainment Initiative funds to attempt to make arsenal rates more competitive.³² For example, the Army projected that the stabilized rate for Rock Island would increase to approximately \$285 per hour, while the stabilized rate at Watervliet was projected to increase to approximately \$400 per hour—approximately double Watervliet’s rate for fiscal year 2014. Officials at the manufacturing arsenals told us that even though they actively market the arsenals’ capabilities to DOD program officials, as their rates increase, the arsenals lose even more customers and workload. These officials explained that this results in a continuing cycle of decreasing requirements and increasing rates, a pattern which several DOD officials we interviewed referred to as a “death spiral.”

²⁹These fixed costs are generally not affected by increases or decreases in workload. Therefore, manufacturing arsenals pay these costs even if they are not manufacturing enough items to break even within their respective Working Capital Fund.

³⁰Stabilized rates are rates that are fixed during the year of execution to protect customers from unforeseen fluctuations that would affect their ability to execute their program. These rates incorporate accumulated operating result adjustments that are designed to return gains or recover losses.

³¹Department of the Army, *Critical Manufacturing Capability Overview: Arsenal Workload*, (July 28, 2014). This assessment did not contain sufficient information for us to determine if the approach used to calculate these rates was reasonable.

³²This assessment did not contain sufficient information for us to determine if the approach used to calculate these projections was reasonable.

DOD Has Taken Actions over the Last 3 Years to Assign Work to the Manufacturing Arsenal, but These Actions Have Not Generated Sufficient Revenue to Recover Operating Expenses

Over the past 3 years, DOD has taken various actions to assign work to the manufacturing arsenals, but these actions have not generated sufficient revenue to recover their operating expenses. Moreover, we found that DOD may not always appropriately consider the manufacturing arsenals as a source of manufacture in a given situation, because it does not have clear, step-by-step implementing guidance on how to conduct make-or-buy analyses to determine whether to procure an item from the arsenals or the private sector. In response to the manufacturing arsenals' inability to generate sufficient revenue to recover their operating expenses, Congress appropriated funds in fiscal years 2014 and 2015 to help recover the arsenals' operating expenses and allow them to maintain competitive rates.³³

DOD Has Taken Actions to Assign Work to the Arsenal

Since 2012, DOD has taken various actions to assign work to the manufacturing arsenals. For example, in December 2012 ASA (ALT) issued a memorandum directing Program Executive Officers, Program Managers, and Product Support Managers³⁴ in the Army's acquisition community to use a market research tool called the Materiel Enterprise Capabilities Database when conducting research to determine whether an item should be made at a manufacturing arsenal or bought from the private sector.³⁵ The tool, available to all DOD components, provides access to information on the capabilities that are available at each of the manufacturing arsenals. According to Army officials, the intent of this effort is to make the Army and other DOD components more aware of the manufacturing arsenals' capabilities, in the hope that such increased awareness will lead these organizations to send the arsenals more work.

³³Pub. L. No. 113-76, div. C, title VII, § 8141 (Jan. 17, 2014) and Pub. L. No. 113-235, div. C, title VII, § 8044 (2014).

³⁴Within DOD, a Program Executive Officer is a key individual in the military acquisition process and is generally responsible for specific programs requiring dedicated executive management (e.g., the Joint Strike Fighter). Program Managers, who fall under the supervision of a Program Executive Officer, are expected to design the acquisition program, prepare programs for decisions, and execute approved program plans. Product Support Managers report to program managers and have several responsibilities, among them to develop and implement a comprehensive product support strategy for the system.

³⁵Memorandum from ASA (ALT), *Materiel Enterprise Capabilities Database (MEC-D)* (Dec. 18, 2012).

Additionally, in an effort to encourage Program Executive Officers and Program Managers to take advantage of the manufacturing arsenals' capabilities, ASA (ALT) issued a memorandum in May 2013 directing Program Executive Officers to report annually on the work they have provided to the arsenals.³⁶ The memo also stated that, when possible, decisions to use the manufacturing arsenals, contractor support, or some combination of arsenals and contractor support should occur early in the acquisition process, for example, during market research or when conducting make-or-buy analyses. Subsequently, in April 2014, the Secretary of the Army directed AMC to work directly with DLA to develop a plan and schedule to "make the manufacturing arsenals a DLA source of supply" for Army-related manufacturing requirements.³⁷ The secretary's memorandum noted that it was the Army's position that all Army-related parts in the DLA inventory that the manufacturing arsenals were capable of manufacturing should first be obtained from the arsenals. In June 2014, DLA determined that it had statutory authority to order from the Army's manufacturing arsenals when procuring supplies for the Army, but noted that the Army would still need to conduct make-or-buy analyses and provide DLA with a list of items that must be manufactured at the arsenals.³⁸ In July 2014, AMC requested that DLA "make the manufacturing arsenals a primary source of supply" for a list of 133 items, such as mounting plates and brackets, that the arsenals identified as items they had manufactured previously.³⁹

In fiscal year 2014—as part of its implementation of section 8141 of the Fiscal Year 2014 Consolidated Appropriations Act⁴⁰ directing the Secretary of the Army to assign sufficient work to the manufacturing arsenals to maintain their critical capabilities—ASA (ALT) reviewed Program Executive Officers' portfolios to identify work that could be directed to the arsenals in order to reduce the likelihood of a rate increase

³⁶Memorandum from ASA (ALT), *Using Army Arsenals* (May 2, 2013).

³⁷Memorandum from Secretary of the Army, *Manufacturing of Army Materiel in Army Arsenals* (Apr. 22, 2014).

³⁸Memorandum from Defense Logistics Agency General Counsel, *Legal Authority for DLA to Purchase Army Supplies from Army Arsenals* (June 25, 2014).

³⁹Memorandum from Army Materiel Command Principal Deputy to the Chief of Staff for Operations G-3/4, *Manufacturing of Army Materiel in Army Arsenals* (July 18, 2014).

⁴⁰Pub. L. No. 113-76 (Jan. 17, 2014).

and help to maintain critical capabilities.⁴¹ ASA (ALT) directed that a program management review be conducted every 6 months on the status of the originally identified workload, which included 26 projects—such as the M320 grenade launcher—to be directed to the manufacturing arsenals during fiscal years 2015 and 2016.

Finally, as part of its September 2014 Report on Manufacturing Arsenal Study, DOD stated that it would continue to encourage the arsenals to use public-private partnerships. These public-private partnerships include, for example, commercial tenants who either rent space or provide services in kind to the manufacturing arsenals. The intent of the partnerships is to reduce the arsenals' overhead, maintenance, and product costs. As of October 2014, AMC had also developed a draft implementation guide for a business development and partnership program to coordinate partnering management, with the objective of helping to positively affect the net operating result of AMC activities.

Actions to Assign Work Have Not Generated Sufficient Revenue, and DOD May Not Always Appropriately Consider the Manufacturing Arsenals as a Source of Manufacture

The various actions that DOD has taken to assign work to the manufacturing arsenals, as described above, have not generated sufficient revenue to recover the arsenals' operating expenses and do not ensure that DOD is appropriately considering the arsenals as a source of manufacture. While DOD's efforts to assign work have increased revenue, the increases have been small relative to the manufacturing arsenals' operating expenses. For example,

- DLA officials told us that as of August 2014, DLA had provided approximately \$10 million of work to the manufacturing arsenals in fiscal year 2014. This work generated enough revenue to recover approximately 2 percent of the arsenals' total expenses in that time frame.
- AMC's Assistant Deputy Chief of Staff for Logistics Integration explained that, as of August 2014, the manufacturing arsenals were engaged in 22 public-private partnerships that yielded a total of approximately \$11 million in revenue for the arsenals. This income would recover approximately 3 percent of the manufacturing arsenals' total expenses in fiscal year 2014. Further, multiple officials from OSD, the Army, and the manufacturing arsenals told us that while public-private partnerships are a good source of a small amount of

⁴¹Memorandum from ASA (ALT), *Arsenal Workload Initiative* (Oct. 3, 2014).

revenue, they are not the long-term solution to the arsenals' ongoing shortage of work.⁴²

In addition, DOD's actions to assign work to the manufacturing arsenals have not ensured that they are consistently considered as a source of manufacture. Specifically, the Army's effort to obtain work from DLA involves make-or-buy analyses that are to be conducted to determine whether to purchase an item from DOD's industrial facilities, such as the manufacturing arsenals, or from the private sector. However, based on our review of relevant documents and interviews with DOD and Army officials, we found that the Army does not have clear, step-by-step implementing guidance—such as an instruction or guidebook—on how to conduct make-or-buy analyses. Army Regulation 700-90 states that ASA (ALT) is responsible for determining where an item should be procured from and directs Program Managers or Program Executive Officers to conduct the analyses that inform these determinations.⁴³ The Army's regulation contains broad descriptions on how to conduct make-or-buy analyses. It notes that the cost estimate for making the item at a manufacturing arsenal should include the direct costs and only those indirect costs that would change as a result of changes in the number of items manufactured. Additionally, while the Army has issued a Cost Benefit Analysis Guide that provides guidance on conducting cost benefit analyses, this guide does not include specific, step-by-step information on the policies, responsibilities, or procedures for conducting make-or-buy analyses.⁴⁴ According to AMC officials, no prescriptive guidance on how to conduct these analyses has been issued so there is flexibility in how they are conducted.

While the existing regulation may provide flexibility, some manufacturing arsenal officials responsible for conducting these analyses at two of the three arsenals stated that the guidance is not clear and that, as a result,

⁴²We have previously reported on the role of public-private partnerships with respect to DOD's maintenance depots. See [GAO-08-902R](#), *Depot Maintenance: DOD's Report to Congress on Its Public-Private Partnerships at Its Centers of Industrial and Technical Excellence (CITEs) Is Not Complete and Additional Information Would Be Useful* (Washington, D.C.: July 1, 2008) and [GAO-03-423](#), *Depot Maintenance: Public-Private Partnerships Have Increased, but Long-Term Growth and Results Are Uncertain* (Washington, D.C.: Apr. 10, 2003).

⁴³Department of the Army, *Logistics: Army Industrial Base Process*, Regulation 700-90, (Jan. 27, 2014).

⁴⁴Department of the Army, *U.S. Army Cost Benefit Analysis Guide*, (Apr. 24, 2013).

they have requested more detailed, step-by-step guidance to ensure that they conduct these analyses consistently. For example, officials at one manufacturing arsenal told us that in conducting make-or-buy analyses, they are supposed to remove sunk costs when developing their estimates.⁴⁵ However, these officials, who are responsible for conducting cost estimates, told us they did not know how to calculate their rates without including the sunk costs. Officials at another manufacturing arsenal told us that the process for conducting make-or-buy analyses is unclear and expressed their opinion that a joint DOD instruction is needed to better implement the process. Federal internal control standards emphasize the importance of establishing detailed policies, procedures, and practices to ensure that such guidance is an integral part of operations.⁴⁶ According to Army officials, having clear implementing guidance to help ensure that make-or-buy analyses are consistently conducted would not guarantee that the manufacturing arsenals receive sufficient workload to recover their operating expenses, but it would ensure that they are appropriately considered. In the absence of clear, step-by-step implementing guidance, such as an instruction or guidebook, that outlines how to conduct make-or-buy analyses, DOD cannot provide reasonable assurance that it is appropriately considering the manufacturing arsenals as a potential source of manufacture, thereby potentially limiting the arsenals' ability to generate revenues.

⁴⁵ According to manufacturing arsenal officials, if the manufacturing arsenal is to be kept open, the sunk costs are incurred regardless of whether the manufacturing arsenal is used to manufacture the item. We have previously interpreted "economical basis" in the context of make-or-buy analyses with respect to the Army's manufacturing arsenals to mean only incremental costs, i.e. out-of-pocket direct costs and associated indirect costs. See *Action Manufacturing Company*, B-220013, 85-1 CPD 357 (Nov. 12, 1985).

⁴⁶ [GAO/AIMD-00-21.3.1](#).

Congress Appropriated Funds to Help the Manufacturing Arsenal's Recover Operating Expenses and Maintain Competitive Rates

Because DOD's efforts to assign work to the manufacturing arsenals have not generated sufficient revenue, Congress appropriated \$150 million to the arsenals in fiscal year 2014 to recover their operating expenses and maintain competitive rates. These amounts were to be made available in the Industrial Mobilization Capacity subaccount on the condition that the Secretary of the Army assign sufficient workload to the arsenals to sustain their critical manufacturing capabilities and ensure cost efficiency, among other goals.⁴⁷ DOD analyzed the financial positions, projected rates, and future workloads of the three manufacturing arsenals and allocated the funding based on the relative need of each. AMC determined that, without this funding, the projected losses at Rock Island and Watervliet Arsenal would have placed those installations in a negative financial position by the end of fiscal year 2014 and that these manufacturing arsenals would need to raise their rates substantially to recover their operating losses. Then, in fiscal year 2015, Congress provided \$225 million to the Army's Working Capital Fund to help maintain competitive rates at the manufacturing arsenals.⁴⁸ Of the funds Congress appropriated in fiscal years 2014 and 2015, AMC allocated the funds to the arsenals as follows:

- Rock Island Arsenal: \$110 million in fiscal year 2014 and \$135 million in 2015.
- Watervliet Arsenal: \$30 million in fiscal year 2014 and \$80 million in fiscal year 2015.

⁴⁷Pub. L. No. 113-76, §8141. Based on calculations made by each of DOD's manufacturing arsenals, the total amount of Industrial Mobilization Capacity funds needed to cover unutilized and underutilized plant capacity costs at all three manufacturing arsenals was approximately \$32 million in fiscal year 2014, lower than the \$150 million Congress appropriated. As a result, AMC officials told us that due to restrictions in 10 U.S.C 4541 that limit the use of funding for unutilized and underutilized capacity, they asked for guidance from the Office of the Army's General Counsel as to whether or not the full \$150 million could be allocated to the manufacturing arsenals. The Office of the Army General Counsel provided its view that the Army could use the entirety of the funds because the planned use was consistent with congressional intent to help the manufacturing arsenals offset financial losses, make their rates more competitive, and allow them to better compete for business with the private sector, among other things. The process of obtaining this legal guidance caused a delay of several months in the application of the funds, but the Army used the funds in June 2014. AMC officials also told us that to better facilitate the process of getting funds to the manufacturing arsenals, the Army created a new funding category—Arsenal Sustainment Initiative funding—for the purpose of helping the arsenals maintain competitive rates, among other things.

⁴⁸Pub. L. No. 113-235, §8044.

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- Pine Bluff Arsenal: \$10 million in fiscal year 2014 and \$10 million in fiscal year 2015.

According to DOD accounting reports and Army officials, the appropriated funds were directly applied to the manufacturing arsenals' revenues to offset losses and reduce rates. However, these funds were not accompanied by any work. Officials at each of the three manufacturing arsenals told us that while the funds from Congress were helpful, they would prefer to receive additional work instead, to recover operating expenses, lower rates, and sustain the arsenals' manufacturing capabilities.

DOD Is Not Strategically Positioned to Sustain the Manufacturing Arsenals' Critical Capabilities

DOD is not strategically positioned to sustain the manufacturing arsenals' critical capabilities because, although it has a strategic plan that covers the manufacturing arsenals, it has not identified fundamental elements, such as time frames, necessary to implement this plan and achieve its goals and objectives. Furthermore, because DOD has not established a process for identifying the manufacturing arsenals' critical capabilities, developed a method for determining a minimum level of workload to sustain these capabilities at each of the arsenals, and identified and implemented this process and method via guidance—such as a DOD instruction—the department is not positioned to determine the minimum workloads or levels of manufacturing equipment and personnel needed to sustain these capabilities.

DOD Has a Strategic Plan for the Manufacturing Arsenals but Has Not Identified Fundamental Elements for Implementation

In 2012, the Army issued its Organic Industrial Base Strategic Plan 2012-2022⁴⁹ (strategic plan), which identifies several goals and objectives related to the three manufacturing arsenals:

- Institutionalize Army sustainment functions so that the Army's priorities inform the manufacturing arsenals' production schedules.
- Assess which competencies and capabilities are essential to the organic industrial base.
- Fund 100 percent of the minimum level of work the manufacturing arsenals must have in order to exercise their critical capabilities sufficiently to sustain them.

⁴⁹Department of the Army, *Organic Industrial Base Strategic Plan 2012-2022*.

The strategic plan also outlines the following objectives related to the arsenals:

- Identify and document critical manufacturing capabilities that the manufacturing arsenals should have.
- Adjust equipment and personnel at the manufacturing arsenals to sustain these critical manufacturing capabilities.
- Establish an integrated Human Capital Investment Plan that supports current and future capability requirements.
- Continue to promote public-private partnerships.

However, the Army has not identified other fundamental elements associated with the achievement of the strategic plan's goals and objectives. Standard practices for project management call for agencies to conceptualize, define, and document specific goals and objectives in their planning processes and to identify the appropriate steps, milestones, time frames, and resources they need to achieve those goals and objectives.⁵⁰ The Army's strategic plan does not contain any of these fundamental elements. Furthermore, Army officials informed us that there are no other documents, such as an implementation plan, that contain these fundamental elements and that they have no plan to document them. They explained that such documentation is not needed, because they fully understand the efforts being taken to implement this strategy, including hosting summits to share ideas on how to increase workload levels at the manufacturing arsenals, working directly with DLA to make the arsenals a DLA source of manufacture, and collaborating with other countries to potentially increase foreign military sales of arsenal goods and services. However, unless it identifies and documents these fundamental elements by including information that would be useful in determining DOD's progress toward achieving its stated goals and objectives, the department is not strategically positioned to sustain the manufacturing arsenals' critical capabilities.

⁵⁰GAO/AIMD-00-21.3.1 and Project Management Institute, *A Guide to the Project Management Body of Knowledge*.

DOD Has Not Identified the Manufacturing Arsenal's Critical Capabilities

Achievement of the strategic plan's goals and objectives is predicated on the identification of the manufacturing arsenals' critical capabilities. However, these critical capabilities have not been identified and documented, as called for in the 2012 strategic plan. Further, DOD has not developed and implemented an agreed-upon process for determining these capabilities, although such efforts are under way. DOD has previously undertaken efforts to identify the manufacturing arsenals' critical capabilities, but those earlier efforts had shortcomings. For example, in April and May 2013, each of the three manufacturing arsenals submitted studies to AMC that they had conducted to identify their critical capabilities and the minimum workload they would need in order to sustain those capabilities. These studies were completed in response to the Senate Armed Services Committee's report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2013, which directed the Secretary of Defense to identify critical manufacturing capabilities and capacities that should be government-owned and -operated, as well as the level of work needed to sustain those capabilities.⁵¹ However, AMC officials responsible for overseeing these studies, as well as officials from OSD and the manufacturing arsenals, told us that the arsenals were not given a standardized, consistent method to follow in identifying their critical capabilities and minimum workloads. Rather, AMC officials told us, they relied on the manufacturing arsenals to each develop their own unique method. A senior OSD official described the resulting process as unsound. Each manufacturing arsenal declared what it believed to be its own critical capabilities in an unstructured way and based its analysis on then-current personnel levels. A senior official at ASA (ALT) expressed a similar opinion, saying that the manufacturing arsenals had labeled everything they were doing at that time, including assembly work, as critical. Nonetheless, the results of each of the three manufacturing arsenals' studies were consolidated into a single report that listed critical capabilities for each of the three arsenals and the estimated workloads necessary to sustain them; this report was submitted to Congress in August 2013.⁵²

⁵¹S. Rep. 112-173 (2012).

⁵²Department of Defense, *Report to Congress on Critical Manufacturing Capabilities and Capacities* (August 2013).

Recognizing the shortcomings of earlier efforts to identify critical capabilities, ODASD (MPP) commissioned a study in March 2013 to (1) establish a process for identifying critical manufacturing capabilities and (2) develop a method to identify the minimum workloads needed to sustain these capabilities. In mid-August 2015, an ODASD (MPP) official told us that OSD hoped to have this process for identifying critical capabilities completed by December 2015, more than 2 years after the effort had begun. This official explained that the working group focused on this effort did not initially include representation from all of the relevant stakeholders, including representatives from the manufacturing arsenals. The official told us that, as a result, the effort had been temporarily paused so that the working group conducting the study could incorporate the new stakeholders.

According to ODASD (MPP) officials, the process being developed to identify critical capabilities and the method for determining the minimum workload needed to sustain them will form the basis of a DOD instruction applicable to all of the military services. ODASD (MPP) officials explained that they have not begun drafting the instruction, and they could not provide an estimated time frame for when the instruction would be issued. They noted that even once the related study is completed, it could take several years to finalize and issue the instruction. ODASD (MPP) officials stated that they expect the development of the instruction to be challenging, given the divergent views within Army leadership, for example on what critical capabilities are needed at the manufacturing arsenals. Until the department completes the study it commissioned in March 2013 and issues its implementing instruction, DOD will continue to lack an agreed-upon process for identifying the manufacturing arsenals' critical capabilities and a method for determining a minimally-sustaining workload to sustain those capabilities.

Because DOD has not identified the manufacturing arsenals' critical capabilities or determined the minimum levels of workload needed to sustain these capabilities, as called for in the strategic plan, DOD is not positioned to achieve the strategic plan's other goals and objectives. For example, it cannot determine the amount of resources that would be needed to assign 100 percent of the minimum level of work required to sustain the critical capabilities. Further, it is not able to adjust the equipment and personnel levels at the manufacturing arsenals to levels that would sustain these capabilities. Regarding equipment and personnel levels, there have been some efforts to make adjustments to reduce operating expenses. For example, in mid-2014, Watervliet Arsenal assessed its manufacturing equipment and identified several dozen

machines that it could potentially lay away or excess to avoid some operating expenses.⁵³ Watervliet projected that it could save over \$250,000 within the first year as a result of these actions.⁵⁴ Officials at Watervliet stated that they were moving forward with these actions. Additionally, in December 2013, AMC conducted an analysis of personnel levels at Rock Island Arsenal and recommended that Rock Island reduce its workforce from its approximately 1,200 personnel to between 500 and 600 personnel.⁵⁵ According to AMC officials, this reduction has not been made. However, unless DOD first identifies the manufacturing arsenals' critical capabilities, it will be unable to determine whether such adjustments of equipment and personnel levels will enable the arsenals to sustain those capabilities.

DOD's Report Addresses Statutory Reporting Elements, but Additional Information Would Have Made It More Consistent with Relevant Research Presentation Standards

DOD's September 2014 Report on Manufacturing Arsenal Study met the statutory requirements to address seven different reporting elements. However, we found that additional information and coordination would have made the report more consistent with relevant generally accepted research presentation standards for a defense research study, and therefore would have helped decision makers to identify and evaluate the information presented.

DOD submitted its report to Congress in response to the mandate in section 322 of the National Defense Authorization Act for Fiscal Year 2014, which required the Secretary of Defense to conduct a one-time review of the manufacturing arsenals, covering the seven elements specified in the statute. The report was to include the results of reviews of

1. current and expected manufacturing requirements across the military services and Defense Agencies, to identify critical manufacturing competencies and supplies, components, end items, parts, assemblies, and sub-assemblies for which there is no or limited

⁵³Layaway refers to the transition of facilities or equipment from production to long-term storage.

⁵⁴This assessment did not contain sufficient information for us to determine if the approach used to calculate these projections was reasonable.

⁵⁵This assessment contained sufficient information for us to determine that the approach used to calculate these figures was reasonable. However, we did not assess the reliability of the underlying data used in these calculations.

domestic commercial source and which are appropriate for manufacturing within an arsenal owned by the United States in order to support critical manufacturing capabilities;

2. how DOD can more effectively use and manage public-private partnerships to preserve critical industrial capabilities at the manufacturing arsenals for future national security requirements, while providing the Department of the Army with a return on its investment;
3. the effectiveness of the strategy of DOD to assign work to be performed at each of the arsenals and the potential for alternative strategies that could better identify work to be performed at each arsenal;
4. the impact of the rate structure driven by the Department of the Army's working capital funds on public-private partnerships at each arsenal;
5. the extent to which operations at each arsenal can be streamlined, improved, or enhanced;
6. the effectiveness of the implementation by the Department of the Army of cooperative agreements, authorized at manufacturing arsenals under section 4544 of title 10, United States Code,⁵⁶ and
7. mechanisms within DOD for ensuring that appropriate consideration is given to the unique manufacturing capabilities of arsenals for manufacturing requirements of DOD for which there is no or limited domestic commercial capability.

Based on our review of the report, we determined that DOD met the statutory requirements, because the report includes each of the seven elements and related content. The 5-page report contains subsections specific to each element, primarily within the context of the cost recovery requirements of the Working Capital Fund and the declining workload experienced by the arsenals. For example, in response to the second element regarding how DOD can more effectively use and manage public-private partnerships, DOD reported that, while it will continue to rely on existing legal authorities for public-private partnerships, more effective use of such partnerships requires the stabilization of arsenal

⁵⁶Section 4544 of Title 10 U.S. Code gives DOD the authority to enter into cooperative agreements—such as sales and leasing contracts—with non-Army entities, both public and private.

rates and the use of alternate rate structures. The report states the arsenals have limited flexibility to adjust their rates and that the need for the arsenals to charge a fully burdened rate that recovers past operating losses causes them to lose potential opportunities for public-private partnerships. DOD also stated that it can more effectively utilize public-private partnerships by increasing the military departments' and defense agencies' knowledge of the arsenals' capabilities through various forums, such as industry days and DOD maintenance symposiums. Additionally, for the fourth element, regarding the impact of the rate structure driven by the Department of the Army's Working Capital Funds on the public-private partnerships at each arsenal, DOD reported that the arsenals must recover their full costs from customer charges, since they are working capital-funded activities. DOD explained that some of the costs borne by the arsenals are attributed to capacity required for surge operations and some are for workforce in excess of workload. The report states that, when the full costs are apportioned over a small workload base, the impact is higher rates, which discourages partners and customers from using the arsenals. DOD's report reiterated that the need for arsenals to charge a fully burdened rate that recovers past operating losses causes them to lose potential opportunities for public-private partnerships.

While DOD's report met the statutory requirements, we determined that DOD could have taken actions that we believe would have made the report more consistent with relevant generally accepted research presentation standards for a defense research study and, therefore, would have made the presented results more useful to decision makers. Specifically, we found that DOD's presentation of most of the reporting elements could have been more sound, complete, and clear, which would have facilitated decision makers' evaluation of the information presented. Furthermore, DOD could have coordinated the results of its study with participants and stakeholders—and obtained and considered their comments—before finalizing its report, to better ensure its soundness, completeness, and clarity.

Generally accepted research standards for a defense research study define a sound and complete defense research study as one that provides, among other things, timely, complete, and relevant information

for the client and stakeholders.⁵⁷ Of these, there is a subset of standards for presenting the results from such a study. The extent to which a report's presentation of results is consistent with these relevant standards is an indication of the ease with which the evidence can be evaluated and of the soundness and completeness of the report and, thus, its usefulness in enabling decision makers to make fully informed decisions. These GAO-developed standards are consistent with current Office of Management and Budget and DOD guidelines on ensuring and maximizing the quality of information disseminated to the public. We determined that the following presentation standards are relevant, given our objectives and the content of DOD's report:

1. Does the report present an assessment that is well documented and conclusions that are supported by the analyses?
2. Are the report's conclusions sound and complete?
3. Are the study results presented in a clear manner?
4. Are study participants/stakeholders informed of the study results and recommendations?

In applying the first three standards on the presentation of results, which describe the soundness, completeness, and clarity of the information presented, we found that DOD's report was consistent with those standards for two of the seven reporting elements. First, the report details how rate structures that are driven by the Army Working Capital Fund impact DOD's ability to maintain public-private partnerships at the manufacturing arsenals. In doing so, it clearly describes how the manufacturing arsenals must charge a rate to their public partners and customers that is determined by the Army Working Capital Fund, and how that rate can increase when work to be performed at the arsenals decreases. According to DOD's report, higher rates can lead to the loss of current and potential opportunities for public-private partnerships at the manufacturing arsenals. Second, the report discusses the extent to which operations at each manufacturing arsenal could be streamlined, improved, or enhanced. In doing so, the report describes in detail the limited flexibility the manufacturing arsenals have to streamline, improve, or enhance their operations. For example, the report notes that, given that

⁵⁷We identified generally accepted research standards for a sound and complete defense research study in our work for [GAO-06-938](#). We determined that these standards are still current and relevant for the purposes of this report.

the manufacturing arsenals are restricted in their ability to conduct reductions in force to adjust their personnel levels, they are limited to using hiring freezes and voluntary early retirements or separations to decrease personnel levels in times of decreased workloads.

For the remaining five reporting elements, we found that DOD's September 2014 report is not consistent with the relevant presentation standards for soundness, completeness, and clarity. For example, to address the seventh reporting element—that DOD identify mechanisms for ensuring that the manufacturing arsenals are considered as a source of manufacture—DOD's report notes that the Secretary of the Army directed AMC to work with DLA to make the Army manufacturing arsenals a source of manufacture for the Army parts within the DLA inventory. DOD's report, however, does not disclose to what extent this has resulted in the manufacturing arsenals actually being considered as a source and does not discuss any challenges in doing so, such as issues associated with guidance for conducting make-or-buy analyses, discussed earlier in this report. Furthermore, to address the first reporting element—to review the manufacturing arsenals' current and expected requirements to support their critical capabilities—DOD's report identified a list of current and expected manufacturing requirements for items that it designated as appropriate for production in one of the manufacturing arsenals, but the report does not provide a clear explanation of how DOD identified these items and does not identify which military services or defense agencies these requirements apply to. Additionally, the report does not disclose that, as previously discussed, DOD has not developed and implemented a process for identifying the manufacturing arsenals' critical capabilities. Moreover, to address the second reporting element—that DOD discuss how it can more effectively use and manage public-private partnerships—DOD's report explains how the department is currently using these partnerships but does not clearly explain how any suggested improvements would provide an additional return on investment to the Army or how the use of public-private partnerships would aid in preserving the manufacturing arsenals' critical capabilities.

Table 1 summarizes our assessment of what DOD included in its report that is consistent with relevant defense research presentation standards. For the five reporting elements for which we found that DOD was not consistent with these standards, the table provides examples of additional information that we determined could have been included to make the report more consistent with the relevant presentation standards for soundness, completeness, and clarity.

Table 1: GAO’s Assessment of the Extent to Which the Department of Defense’s (DOD) September 2014 Report on Manufacturing Arsenal Study is Consistent with Relevant Generally Accepted Defense Research Presentation Standards

DOD Was Required to Review	GAO Comparison of DOD Reporting Element Response to Relevant Generally Accepted Defense Research Presentation Standards found that DOD’s Report	To be More Consistent with Relevant Generally Accepted Defense Research Presentation Standards, DOD Could Have Described How It
the manufacturing arsenals’ current and expected manufacturing requirements	lists both current and expected manufacturing requirements but does not identify the requirements by service or agency or identify which service components and defense agencies the requirements apply to.	identified required capabilities with no other manufacturing source.
the arsenals’ use and management of public-private partnerships	explains how DOD is currently using public-private partnerships but does not explain how the suggested improvements and use of alternate rate structures would provide an additional return on investment to the Army or how they would aid in preserving critical industrial capabilities for future national security requirements.	determined changes that would help with return on investment and aid in preserving the manufacturing arsenals’ critical capabilities.
the effectiveness of the strategies to assign work at the arsenals	explains DOD’s current strategy but does not provide a description of time frames and milestones; mentions strategies to assign workload but does not provide relevant analyses of the potential effectiveness of these alternative strategies.	analyzed alternative strategies for assigning work to be performed at the manufacturing arsenals.
the effect of the Army Working Capital Fund on the arsenals’ public-private partnership rate structures	explains how the Army Working Capital Fund works at each manufacturing arsenal and discusses the fund’s influence on rate structure; discusses at least one example of how rate structure affects public-private partnerships.	not applicable
the extent to which operations at each arsenal can be streamlined, improved, or enhanced	refers to actions that could be taken to streamline, improve, or enhance operations at all three of the manufacturing arsenals.	not applicable
the effectiveness of implementing cooperative agreements at the arsenals	explains the Army’s implementation of cooperative agreements and the goals of these agreements but does not explain the extent to which these goals are being achieved. For example, the report does not address whether skills and equipment related to core competencies have been preserved through cooperative agreements.	achieved the intended purpose of cooperative agreements authorized at manufacturing arsenals or preserved skills and equipment related to core competencies at these arsenals.
the mechanisms for appropriately considering the arsenals’ capabilities as a source of manufacture	identifies mechanisms for ensuring that the manufacturing arsenals are considered as a source of manufacture, but these mechanisms may not be effective until DOD has better defined the arsenals’ critical capabilities.	identified the manufacturing arsenals’ unique manufacturing capabilities.

Source: Pub. Law No. 113-66, §322 (2013); DOD, Report on Manufacturing Arsenal Study (Sep. 11, 2014); and GAO, Defense Transportation: Study Limitations Raise Questions about the Adequacy and Completeness of the Mobility Capabilities Study and Report, [GAO-06-938](#) (Washington D.C.: Sep. 20, 2006). GAO’s analysis of DOD’s September 2014 report against section 322 of the National Defense Authorization Act for Fiscal Year 2014 and relevant generally accepted research standards for the presentation of defense research study results found in the GAO report. | GAO-16-86

In addition, we determined that DOD’s report was not consistent with the generally accepted research standard that participants or stakeholders be informed of the defense study’s results and recommendations. Officials

from a DOD office mentioned in the September 2014 report told us that no one from their office either participated in the study or reviewed the report prior to its publication. They explained, after we provided them a copy of the report, that one of the analyses that was reportedly conducted by their office—and mentioned in DOD's report—was not conducted in the manner described or for the purposes indicated in the report. They further explained that had they reviewed the information in the report about the analysis their office conducts, such a misstatement would not have occurred. Additionally, officials from relevant DOD components—including the three manufacturing arsenals and their higher headquarters—told us that they had not been given the opportunity to review or comment on the final version of the report before it was issued. For example, when we spoke with officials at the manufacturing arsenals and at some of the headquarters organizations, they told us that they had not seen the issued report until we showed it to them. Moreover, AMC officials told us that the manufacturing arsenals had not been given an opportunity to review the information used to support the report to confirm that the details in the final report were complete.

When we discussed the results of our assessment of the September 2014 report with ODASD (MPP) officials who had the lead for developing the report, they disagreed with our assessment related to relevant generally accepted research presentation standards. In our June 2015 meeting, they explained that they had addressed the statutory requirements and that was sufficient, questioning the need to follow the generally accepted defense research presentation standards we determined to be relevant in assessing DOD's report. We agree that DOD's report met the statutory requirements by including a discussion of each of the seven reporting elements. However, we also believe that it is appropriate to apply the relevant generally accepted defense research standards for the presentation of results, because consistency with these standards helps to indicate the extent to which the results presented in the report are useful to decision makers. Moreover, as previously mentioned, the relevant generally accepted research presentation standards we used to assess DOD's report are consistent with Office of Management and Budget guidelines and DOD guidance. ODASD (MPP) officials did not provide any examples where we had overlooked information in the report that our assessment determined could have been included to make it more sound, complete, and clear for use by decision makers. Further, these officials did not disagree with our assessment that the report had not been shared or coordinated with participants and stakeholders.

Conclusions

As a result of the decline in demand for materiel, DOD is facing challenges in assigning work to its three manufacturing arsenals. DOD has taken various actions in an effort to assign work to the manufacturing arsenals, but these actions collectively have not resulted in the arsenals generating sufficient revenue to recover their operating expenses. The effectiveness of these actions has been limited in part by the fact that DOD has not developed clear, step-by-step implementing guidance on how to conduct make-or-buy analyses, which would help to ensure that the arsenals are appropriately considered as a source of manufacture. Because the arsenals are generating insufficient revenue, Congress has provided \$375 million collectively in the prior and current fiscal years to help recover operating losses and maintain competitive rates. Unless the manufacturing arsenals are able to generate sufficient revenue to recover their operating expenses, it is likely that they will need continued funding or will need to make adjustments to personnel and equipment levels to reduce their operating expenses and maintain competitive rates.

DOD is not strategically positioned to sustain the manufacturing arsenals' critical capabilities. These critical capabilities help ensure that DOD is able to respond to national emergencies and obtain products and services that it could not otherwise acquire from private industry in an economical manner. While there is a strategic plan that covers the manufacturing arsenals and has established related goals and objectives, DOD has not identified or documented fundamental elements, such as time frames and resources, for implementing the plan. In not identifying and documenting these fundamental elements, DOD is inconsistent in applying standard practices for project management and, therefore, lacks information that would be useful in determining whether progress is being made in achieving the plan's goals and objectives. More importantly, DOD cannot achieve the strategic plan's goals and objectives until it has identified the manufacturing arsenals' critical capabilities. After falling short in prior efforts, DOD has an effort under way to develop a process to identify critical capabilities and a method for determining the minimum workload needed to sustain them, but that effort has been delayed. As a result, it is not clear when DOD will be able to act on its intention to develop and issue guidance—such as a DOD instruction—to implement the process and method being developed. Until such an instruction is issued, DOD will continue to lack a process for identifying the manufacturing arsenals' critical capabilities and will not be positioned to determine the minimum amount of work or the levels of equipment and personnel needed to sustain the arsenals' capabilities.

With the issuance of its September 2014 report on the manufacturing arsenals, DOD met statutory requirements. However, we determined that additional information would have made the report more consistent with relevant generally accepted research presentation standards for a defense study. Additionally, had DOD coordinated its results with participants and stakeholders, they could have provided comments or corrections to misstatements, as needed. Doing so would have enabled DOD to present a more sound, complete, and clear report that not only would have met statutory requirements, but would have been more useful to Congress in its oversight of DOD's manufacturing arsenals. Because DOD's report was prepared in response to a one-time, nonrecurring mandate, we are not making any recommendations to amend the report or provide additional detail.

Recommendations for Executive Action

To help DOD ensure that it appropriately considers the manufacturing arsenals as a source of manufacture and is strategically positioned to sustain the manufacturing arsenals' critical capabilities, we recommend that the Secretary of Defense direct

- The Secretary of the Army to
 - issue clear, step-by-step implementing guidance, such as an instruction or guidebook, on the process for conducting make-or-buy analyses in a consistent manner and
 - identify and document fundamental elements—such as steps, interim milestones, time frames, and resources—for implementing the Army's Organic Industrial Base Strategic Plan 2012-2022 and
- The Office of the Deputy Assistant Secretary of Defense for Maintenance Policy and Programs—in coordination with the military services, as appropriate, to
 - complete DOD's ongoing effort to establish a process for identifying the manufacturing arsenals' critical capabilities and a method for determining the minimum workload needed to sustain these capabilities and
 - develop and issue guidance, such as a DOD instruction, to implement the process for identifying the manufacturing arsenals' critical capabilities and the method for determining the minimum workload needed to sustain these capabilities.

Agency Comments and Our Evaluation

We provided a draft of this report to DOD for review and comment. In written comments, DOD concurred with all of our recommendations. DOD's comments are summarized below and reprinted in appendix II. DOD also provided technical comments which we have incorporated into our report as appropriate.

In addition to its overall concurrence with our recommendations, DOD stated that it does not agree with the implication that these steps will lead to the provision of sufficient revenue to cover all of the manufacturing arsenals' expenses. However, we did not state or imply that implementation of these recommendations will increase revenue. Rather, the recommendations' stated intent is to ensure that DOD appropriately considers the manufacturing arsenals as a source of manufacture and is strategically positioned to sustain their critical capabilities. As explained in our report, until DOD determines the manufacturing arsenals' critical capabilities, it will not be positioned to determine the minimum amount of work or the levels of equipment and personnel needed to sustain those capabilities.

DOD concurred with our recommendation related to issuing implementing guidance on make-or-buy analyses but provided no details on how or when it would issue such guidance. Further, DOD explained that it did not agree with the implication that make-or-buy analyses would necessarily increase revenue provided to arsenals and noted that the process may result in reduced revenue. We did not state or imply that the issuance of implementing guidance on the process for conducting make-or-buy analyses would increase revenue. Rather, we believe that in the absence of clear, step-by-step implementing guidance on how to conduct make-or-buy analyses, DOD cannot provide reasonable assurance that it is appropriately considering the manufacturing arsenals as a potential source of manufacture. As stated in our report, although implementing such guidance would not guarantee that the manufacturing arsenals receive sufficient workload, it would ensure that they are appropriately considered.

DOD concurred with our recommendation related to implementing its 2012 strategic plan but provided no details on how or when it would implement the recommendation. DOD also stated that, given the overall constraints placed on the department's budget under the Budget Control Act of 2011, as amended, it cannot guarantee the availability of any resources that it would identify by implementing this recommendation. Our report discusses how standard practices for project management call for agencies to conceptualize, define, and document specific goals and

objectives in their planning processes and to identify the appropriate steps, milestones, time frames, and resources they need to achieve those goals and objectives. However, DOD's strategic plan does not contain any of these fundamental elements. Unless DOD identifies and documents fundamental elements by including information that would be useful in determining its progress toward achieving its stated goals and objectives, the department will not be strategically positioned to sustain the manufacturing arsenals' critical capabilities in any budget environment.

DOD concurred with our recommendation related to developing a process to identify the arsenals' critical capabilities and a method to determine the minimum workload needed to sustain those capabilities. DOD stated that its effort to address this recommendation is ongoing, but added it does not agree that developing such a process will result in sufficient revenue to cover arsenal expenses. We did not state or imply that establishing a process for identifying the manufacturing arsenals' critical capabilities and a method for determining the minimum workload needed to sustain these capabilities would result in sufficient revenue to cover arsenal expenses. Rather, we believe such a process is needed to help ensure that DOD is strategically positioned to sustain the manufacturing arsenals' critical capabilities and achieve its 2012 strategic plan's goals and objectives. Although DOD did not specifically comment on our recommendation related to issuing guidance to implement a process for identifying the arsenals' critical capabilities and a method for determining the minimum workload needed to sustain these capabilities, it commented that it expects to issue an instruction incorporating such a process by the end of fiscal year 2016. We believe that, if fully implemented, these actions should address our recommendations and strategically position the department to sustain the manufacturing arsenals' critical capabilities.

In its comments, DOD also took issue with how we characterized Congress "providing" additional funds to cover the excess of arsenal expenses over revenue. DOD stated that no additional funds were added to the DOD budget for this shortfall; rather, Congress "redirected funding" from other essential defense missions. We did not state or imply that amounts appropriated for arsenal expenses were additional to DOD's overall budget authority for fiscal years 2014 and 2015. Our discussion of funding for Industrial Mobilization Capacity and the Arsenal Sustainment Initiative highlighted specific appropriations made by Congress to the Working Capital Fund for the express purposes of covering the costs of unutilized or underutilized plant capacity through the Working Capital Fund's Industrial Mobilization Capacity subaccount in fiscal year 2014

and maintaining competitive rates at arsenals through the Arsenal Sustainment Initiative in fiscal year 2015. We did not discuss these appropriations in the context of DOD's overall budget authority, or state or suggest that they were derived from a concurrent increase in budget authority.

Finally, DOD did not agree with our assessment of DOD's September 2014 report on the manufacturing arsenals against four generally accepted research presentation standards, questioning why the presentation standards are more relevant for this particular DOD report to Congress than they are for the many reports submitted each year. We do not believe that the presentation standards we applied are more relevant for the September 2014 report than for any other report DOD submits to Congress. We believe that all reports submitted by federal agencies to Congress should not only comply with applicable statutory reporting requirements, as was the case with the September 2014 report but should also follow applicable generally accepted research standards. As discussed in our methodology, we determined that the following four standards, which focused on the presentation of results, were applicable as DOD did not have a documented method for its study and given the contents of the September 2014 report:

- the report presents an assessment that is well documented and conclusions that are supported by the analyses;
- the report's conclusions are sound and complete;
- the study results are presented in a clear manner; and
- study participants/stakeholders are informed of the study results and recommendations.

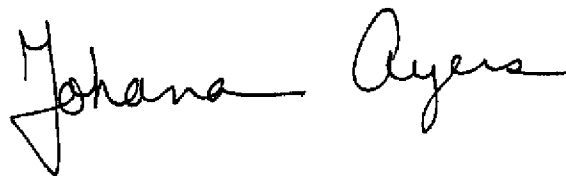
In its comments, DOD did not provide any explanation as to why it believes these standards should not have been applied in our assessment of the September 2014 report.

DOD further noted in its comments that the application of the generally accepted research presentation standards would not have altered the September 2014 report or its contents. We disagree. As discussed in the report, we identified multiple examples of additional information that we determined could have been included to make the report more consistent with the relevant presentation standards for soundness, completeness, and clarity. DOD also stated that we are not correct in our assertion that the report was not shared or coordinated with participants and stakeholders, explaining that the September 2014 report was fully staffed with the Army's Assistant Secretary for Acquisition, Logistics and

Technology; the Deputy Chief of Staff for Logistics; and the Army Materiel Command. We do not disagree that the report was coordinated with the organizations identified in DOD's comments. However, we identified other key stakeholders with whom the report was not coordinated. Most notably, we found that the manufacturing arsenals had not been given an opportunity to review the information used to support the report or to review the final version of the report. Had DOD adhered to relevant generally accepted research presentation standards for a defense study in preparing the September 2014 report, it could have better ensured the report's soundness, completeness, and clarity and therefore, its usefulness to decision makers.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, and the Secretaries of the Army, Air Force, and Navy. The report also is available at no charge on GAO's website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-5741 or ayersj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.

A handwritten signature in black ink that reads "Johana Ayers". The signature is fluid and cursive, with the first name "Johana" and the last name "Ayers" clearly distinguishable.

Johana Ayers
Director
Defense Capabilities and Management

List of Addressees

The Honorable John McCain
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Thad Cochran
Chairman
The Honorable Richard Durbin
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Mark Kirk
Chairman
The Honorable Jon Tester
Ranking Member
Subcommittee on Military Construction,
Veterans' Affairs, and Related Agencies
Committee on Appropriations
United States Senate

The Honorable Mac Thornberry
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Rodney Frelinghuysen
Chairman
The Honorable Pete Visclosky
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Honorable Charlie Dent
Chairman
The Honorable Sanford Bishop
Ranking Member
Subcommittee on Military Construction,
Veterans' Affairs, and Related Agencies
Committee on Appropriations
House of Representatives

The Honorable Charles Grassley
United States Senate

Appendix I: Objectives, Scope, and Methodology

This report assesses (1) actions, if any, that the Department of Defense (DOD) has taken to assign work to the manufacturing arsenals to generate sufficient revenue to recover their operating expenses; (2) the extent to which DOD is strategically positioned to sustain the manufacturing arsenals' critical capabilities; and (3) the extent to which DOD's September 2014 report meets the requirements to address the statutory reporting elements and is consistent with relevant generally accepted research presentation standards for a defense research study.¹ To address these reporting objectives, we visited or contacted knowledgeable officials with responsibilities related to arsenal operations from the following organizations:

Department of Defense

Office of the Under Secretary of Defense for Acquisition, Technology and Logistics

- Office of the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy
- Defense Procurement and Acquisition Policy
- Office of the Assistant Secretary of Defense for Logistics and Materiel Readiness
 - Office of the Principal Deputy Assistant Secretary of Defense for Maintenance Policy and Programs
 - Office of the Deputy Assistant Secretary of Defense for Maintenance Policy and Programs
 - Defense Logistics Agency

Defense Finance and Accounting Service
Defense Manpower Data Center

Department of the Army

Deputy Assistant Secretary of the Army for Acquisition Policy and Logistics

- Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology
- Department of the Army, Headquarters / G4, G8

¹Department of Defense, *Report on Manufacturing Arsenal Study* (August 2014). DOD's report is dated August 2014, but it was not submitted to the congressional defense committees until September 11, 2014. As a result, throughout our report, we refer to DOD's report as its September 2014 report.

- Army Materiel Command / G1, G3, G4, G8
 - Joint Munitions Command Life Cycle Management Command
 - Pine Bluff Arsenal
 - TACOM Life Cycle Management Command
 - Rock Island Arsenal Joint Manufacturing and Technology Center
 - Watervliet Arsenal Joint Manufacturing and Technology Center
 - Army Program Executive Office Ground Combat Systems
 - Abrams Tank Program Office

We also obtained pertinent documents, including DOD directives, instructions, and reports; Army regulations and instructions, memorandums, strategic plans, and other guidance; and information on the organic defense industrial base and each of the three manufacturing arsenals (Pine Bluff, Rock Island, and Watervliet), such as the arsenals' critical capabilities and current levels of workload. Additionally, we discussed personnel and workload data with subject matter experts at the Defense Manpower Data Center and the Defense Finance and Accounting Service. To provide background information on recent trends in workload at the three manufacturing arsenals, we summarized direct labor hour data compiled by Army Materiel Command officials for civilian and contract personnel from fiscal years 2000 through 2014. We assessed the reliability of the direct labor hour data we obtained from Army Materiel Command through interviews with knowledgeable officials and determined that these data were sufficiently reliable to use in this report for this limited purpose.

For our first objective, to assess the actions, if any, that DOD has taken to assign work to the manufacturing arsenals to generate sufficient revenue to recover their operating expenses, we also interviewed DOD officials who were involved in assessing and implementing efforts to improve or enhance operations at the arsenals. We compared existing guidance on the process used to consider manufacturing arsenals as a source of manufacture to federal internal control standards for control activities contained in GAO's Standards for Internal Control in the Federal Government.²

²GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: Nov. 1, 1999).

For our second objective, to assess the extent to which DOD is strategically positioned to sustain the manufacturing arsenals' critical capabilities, we interviewed DOD officials who contributed significantly to the department's current strategy to assign work to be performed at the arsenals. We then compared DOD's existing strategy for the manufacturing arsenals to standard practices for project management and identified discrepancies.³ We also reviewed two Army assessments related to the levels of equipment and personnel and determined that one of the assessments described an approach and findings that were reasonable, but we did not assess the accuracy or reliability of the underlying data because doing so was beyond the scope of this review. The other assessment, however, did not contain sufficient information for us to determine if the approach used to calculate its results was reasonable. In the absence of other reliable sources, we limited the use of these three assessments in the report to noting that the arsenals had conducted assessments containing recommendations intended to guide subsequent decision making.

For our third objective, to determine the extent to which DOD's September 2014 report meets the requirements to address the statutory reporting elements and is consistent with relevant generally accepted research presentation standards for a defense research study, we conducted a two-part assessment of DOD's September 2014 report. First, to assess the extent to which DOD's September 2014 report meets the statutory requirement to address the seven reporting elements, we compared the report to the elements listed in section 322 of the National Defense Authorization Act for Fiscal Year 2014.⁴ For each reporting element, we determined whether DOD's report met the statutory requirement by including the element and providing related content. Second, we assessed the extent to which DOD's September 2014 report is consistent with relevant generally accepted research presentation standards for a defense research study. To do so, we determined which generally accepted research presentation standards for a sound,

³GAO/AIMD-00-21.3.1 and Project Management Institute, *A Guide to the Project Management Body of Knowledge* (PMBOK® Guide), 4th ed. (Newtown Square, PA: 2008) (Guide). This Guide provides standards for project managers. We have used this Guide to provide criteria in previous reports, including GAO, *National Preparedness: FEMA Has Made Progress, but Needs to Complete and Integrate Planning, Exercise, and Assessment Efforts*, GAO-109-369 (Washington, D.C.: Apr. 30, 2009).

⁴Pub. Law No. 113-66, §322 (2013).

complete, and clear defense research study were relevant to the contents of the report, given our objective. In 2006, we described these standards in a report on DOD transportation capabilities.⁵ In this 2006 report, we reviewed research literature and DOD guidance and identified frequently occurring, generally accepted research standards that are relevant for defense studies, including those related to the presentation of results. These GAO-developed generally accepted research presentation standards are consistent with Office of Management and Budget guidelines⁶ and DOD guidance⁷ on ensuring and maximizing the quality of information disseminated by federal agencies to the public. We identified 36 generally accepted research standards for a defense research study in the areas of design, execution, and presentation of results. We determined that these standards are still current and relevant for the purposes of this report. Because DOD did not have a documented method for its study, we did not assess DOD's September 2014 report against the generally accepted research standards for design (14 standards) and execution of the design (15 standards). Consequently, we confined our objective and assessment to the subset of 7 standards for presenting the results of a defense study. Of these 7 standards related to the presentation of results, we determined, based on the content of DOD's report, that the following 4 were relevant:

1. Does the report present an assessment that is well documented and conclusions that are supported by the analyses?
2. Are the report's conclusions sound and complete?
3. Are the study results presented in a clear manner?
4. Are study participants/stakeholders informed of the study results and recommendations?

⁵GAO, *Defense Transportation: Study Limitations Raise Questions about the Adequacy and Completeness of the Mobility Capabilities Study and Report*, [GAO-06-938](#) (Washington, DC: Sept. 20, 2006).

⁶Office of Management and Budget (OMB), *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, 67 Fed. Reg. 8452 (Feb. 22, 2002). These guidelines are still in effect.

⁷Memorandum from Deputy Secretary of Defense, *Ensuring the Quality of Information Disseminated to the Public by the Department of Defense*, dated Feb. 10, 2003, 68 Fed. Reg. 55944 (Sept. 29, 2003). This memorandum is still in effect.

We determined that the remaining three research presentation standards were not relevant, given our review's objectives and based on the content of DOD's report. For example, since we separately assessed the extent to which DOD's report met the statutory requirements to address the statutory reporting elements, we did not assess whether DOD's report addressed its objectives in the context of the generally accepted defense research presentation standards, as this would have been duplicative. Also, because the report did not include recommendations or provide options, we did not apply the generally accepted defense research presentation standards on whether recommendations were supported by analyses or whether a realistic range of options was provided.

After determining the relevant presentation standards, we then compared the contents of DOD's September 2014 report and available supporting documentation—such as DOD policy, guidance, assessments, and briefings—to the 4 relevant research presentation standards. The extent to which the report's presentation of results is consistent with these relevant standards is an indication of the ease with which the evidence can be evaluated and of the soundness and completeness of the report and, thus, its usefulness in enabling decision makers to make fully informed decisions. We considered DOD's response to a statutory reporting element to be consistent with relevant generally accepted defense research presentation standards when the report explicitly addressed (e.g., included meaningful facts, figures, or clearly discussed) all aspects of the element and included sufficient specificity and detailed support. We considered DOD's response to a reporting element to be inconsistent with these standards when the report neither explicitly addressed all aspects of the element nor included sufficient specificity and detailed support. In such cases, we provided examples of additional information that, although not statutorily required, we believe would have made the report more consistent with the 4 relevant generally accepted research presentation standards. In addition, we discussed the results of our assessment of the September 2014 report with ODASD (MPP) officials—who had the lead for developing the report—and obtained their perspectives regarding the approach they used to develop it, including their rationale for (1) choosing the level of detail they provided for particular reporting elements in the report and (2) not sharing the report with participants and stakeholders before it was issued.

We conducted this performance audit from June 2014 to November 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our

findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Defense



LOGISTICS AND
MATERIEL READINESS

ASSISTANT SECRETARY OF DEFENSE
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

NOV 6 2015

Ms. Johana Ayers
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

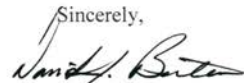
Dear Ms. Ayers:

This is the Department of Defense (DoD) response to the Government Accountability Office (GAO) Draft Report, GAO-16-86, "DOD MANUFACTURING ARSENALS: Actions Needed to Identify and Sustain Critical Capabilities" dated September 10, 2015 (GAO Code 351929). Detailed comments on the report recommendations are enclosed. While DoD concurs with the recommendations as written, the Department does not agree with the GAO implications that these steps will lead to the provision of sufficient revenue to cover all expenses of the arsenals. A variety of factors, including the caps on DoD spending under the Budget Control Act of 2011, as amended, may preclude that outcome.

In addition, DoD notes that it is misleading for GAO to characterize Congress' "providing" additional funds to cover the excess of arsenal expenses over revenue. No additional funds were added to the DoD budget for this shortfall. Rather, Congress redirected funding from other essential defense missions that had been determined to be a higher priority in the President's Budget.

Finally, DoD does not agree with the GAO statements regarding DoD's application of what GAO refers to as "generally accepted defense research presentation standards." The report offers no clearly articulated basis for GAO's "determination" that the presentation standards are more relevant for this particular DoD report to Congress on arsenals than they are for the many other reports submitted each year. DoD will continue to meet the reporting requirements as defined by statute and any accompanying report language from the Congress. The arsenal report under question here did meet all seven elements of congressional requirements, and the application of these GAO standards would not have altered the DoD report or its contents. In addition, GAO is not correct in its assertion that the report was not "shared or coordinated with participants and stakeholders." The DoD report was fully staffed with the Army's Assistant Secretary for Acquisition, Logistics, and Technology, the Deputy Chief of Staff for Logistics, and the Army Materiel Command, under which all the arsenals reside.

Thank you for the opportunity to provide this input. I would be glad to discuss further, should you desire to do so.

Sincerely,

David J. Berteau

Enclosure:
As stated

GAO Draft Report Dated September 10, 2015
GAO-16-86 (GAO CODE 351929)

**“DOD MANUFACTURING ARSENALS: ACTIONS NEEDED TO IDENTIFY AND
SUSTAIN CRITICAL CAPABILITIES,”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATION**

RECOMMENDATION 1: To help Department of Defense (DoD) ensure that it appropriately considers the manufacturing arsenals as a source of manufacture and is strategically positioned to sustain the manufacturing arsenals’ critical capabilities, the Government Accountability Office (GAO) recommends that the Secretary of Defense direct the Secretary of the Army to issue clear and detailed implementing guidance, such as an instruction or guidebook, on the process for conducting make-or-buy analyses in a consistent manner.

DoD RESPONSE: Concur. However, DoD does not agree with the GAO implication that make-or-buy analyses will necessarily increase revenue provided to arsenals. The process may in fact result in reduced revenue and thus may not resolve the core problems of declining budgets and reduction in demand.

RECOMMENDATION 2: To help Department of Defense (DoD) ensure that it appropriately considers the manufacturing arsenals as a source of manufacture and is strategically positioned to sustain the manufacturing arsenals’ critical capabilities, the Government Accountability Office (GAO) recommends that the Secretary of Defense direct the Secretary of the Army to identify and document fundamental elements—such as steps, interim milestones, time frames, and resources—for implementing the Army’s Organic Industrial Base Strategic Plan 2012-2022.

DoD RESPONSE: Concur. However, given the overall constraints placed on the DoD budget under the Budget Control Act of 2011, as amended, DoD cannot guarantee the availability of resources which would be identified by implementing this recommendation.

RECOMMENDATION 3: To help Department of Defense (DoD) ensure that it appropriately considers the manufacturing arsenals as a source of manufacture and is strategically positioned to sustain the manufacturing arsenals’ critical capabilities, the Government Accountability Office (GAO) recommends that the Secretary of Defense direct the Office of the Deputy Assistant Secretary of Defense for Maintenance Policy and Programs—in coordination with the military services, as appropriate, to complete DOD’s ongoing effort to establish a process for identifying the manufacturing arsenals’ critical capabilities and a method for determining the minimum workload needed to sustain these capabilities and develop and issue guidance, such as a DoD instruction, to implement the process for identifying the manufacturing arsenals’ critical capabilities and the method for determining the minimum workload needed to sustain these capabilities.

DoD RESPONSE: Concur. The effort is on-going and the Department expects to issue a DoD instruction, incorporating a process for identifying the manufacturing arsenals' critical capabilities and a method for determining the minimum workload needed to sustain these capabilities by the end of FY-16. However, DoD does not agree with GAO that this process will result in sufficient revenue to cover arsenal expenses.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

In addition to the contact named above, the following staff members made key contributions to this report: Larry J. Junek, Assistant Director; Yecenia C. Camarillo, Timothy J. Carr, Patricia Farrell Donahue, Cynthia L. Grant, Joanne Landesman, Amie Lesser, Felicia M. Lopez, Oscar W. Mardis, Sabrina C. Streagle, and Matthew R. Young.

Related GAO Products

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